

## Claims

1. An extrusion coated substrate having a coating  
5 comprising a polyethylene produced by polymerization  
catalysed by a single site catalyst and comprising as  
comonomers to ethylene at least two C<sub>4-12</sub> alpha olefins.
2. An extrusion coated substrate as claimed in claim 1  
10 wherein said polyethylene comprises as comonomers to  
ethylene at least two alpha olefins selected from but-1-  
ene, hex-1-ene, 4-methyl-pent-1-ene, hept-1-ene, oct-1-  
ene, and dec-1-ene.
- 15 3. An extrusion coated substrate as claimed in claim 2  
wherein said polyethylene comprises an ethylene butene  
copolymer and an ethylene hexene copolymer.
- 20 4. An extrusion coated substrate as claimed in claim 1  
wherein said polyethylene comprises a bimodal terpolymer  
comprising
  - a) a lower molecular weight copolymer of ethylene  
and but-1-ene
  - 25 b) a higher molecular weight copolymer of ethylene  
and a C<sub>5</sub> to C<sub>12</sub> alpha-olefin,
- 30 5. An extrusion coated substrate as claimed in claim 1  
wherein said polyethylene comprises a bimodal polymer  
comprising
  - a) a lower molecular weight polymer which is a  
binary copolymer of ethylene and a C<sub>4</sub> to C<sub>12</sub>  
35 alpha-olefin and
  - b) a higher molecular weight polymer which is  
either a binary copolymer of ethylene and but-1-

ene, if the lower molecular weight polymer of a) is a binary copolymer of ethylene and a C<sub>5</sub> to C<sub>12</sub> alpha-olefin, or a terpolymer of ethylene, but-1-ene and a C<sub>5</sub> to C<sub>12</sub> alpha-olefin.

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6. An extrusion coated substrate as claimed in claim 1 to 5 wherein said polyethylene has an MWD 3 to 6, an MFR<sub>2</sub> of 5 to 20 g/10min and a density of 905 to 930 kg/m<sup>3</sup>.

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7. An extrusion coated substrate as claimed in claim 1 to 6 wherein said polyethylene has a heat sealing force which varies by less than 2N/25.4 mm over a temperature range of at least 30°C.

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8. An extrusion coated substrate as claimed in claim 1 to 7 wherein said coating comprises LDPE.

9. An extrusion coated substrate as claimed in claim 8 wherein LDPE forms 15 to 35 wt% of the coating.

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10. An extrusion coated substrate as claimed in claim 1 to 9 comprising multiple coating layers.

11. An extrusion coated substrate as claimed in claim 1 to 10 wherein said substrate is paper, cardboard, a polyester film, cellophane, polyamide film, polypropylene film, oriented polypropylene film or aluminium foil.

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12. The use of a polyethylene produced by polymerization catalysed by a single site catalyst and comprising as comonomers to ethylene at least two C<sub>4-12</sub> alpha olefins in extrusion coating or for the formation of cast films.

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13. A process for extrusion coating a substrate comprising extruding a polyethylene produced by polymerization catalysed by a single site catalyst and

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which comprises as comonomers to ethylene at least two C<sub>4-12</sub> alpha olefins to form a polymer melt and coating a substrate with said melt.

- 5 14. A process as claimed in claim 13 wherein said polyethylene is produced in a two-stage process comprising a loop reactor followed by a gas phase reactor.
- 10 15. A process as claimed in claim 13 or 14 wherein said polyethylene is blended with LDPE prior to extrusion.